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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,216	11/13/2003	Peter N. Gray	BTEC 9693	8452

321 7590 02/01/2007  
SENNIGER POWERS  
ONE METROPOLITAN SQUARE  
16TH FLOOR  
ST LOUIS, MO 63102

EXAMINER
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ZACHARIA, RAMSEY E

ART UNIT	PAPER NUMBER
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1773

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	02/01/2007	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 02/01/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspatents@senniger.com

## Office Action Summary

**Application No.**

10/712,216

**Applicant(s)**

GRAY ET AL.

**Examiner**

Ramsey Zacharia

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-68 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-68 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 19 December 2006 has been entered.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claim Rejections - 35 USC § 103***

3. Claims 1, 2, 4, 6-13, 23, 24, 26, 27, 29-36, 46, 47, 49, 50, and 52-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Opperman et al. (ZA 9602517 A).

Opperman et al. teach a gas generating device comprising a monolithic body having particulates dispersed in a plastic matrix. The particles may be sodium metabisulphite to generate SO<sub>2</sub>. The plastic may be polyvinyl chloride or polyethylene (page 7, paragraph 3). In the embodiment of Example 1, the device comprises 38 wt% polyvinyl chloride and 33 wt% sodium metabisulphite (page 10).

Regarding claims 10, 11, 33, 34, 56, 57, polyethylene has a melt index of between about 0.5 and about 8.0 and melt temperature of between about 105 and about 150 °C. Melt flow is

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reported as between 0.22 (which reads on the lower limit of about 0.5) and 6.5 and the melting point is reported as between 108-121 °C.

Opperman et al. do not teach that their device has a thickness of between about 5-500 µm. However, Opperman et al. do teach that the thickness of the device is a results effective variable that influences the SO<sub>2</sub> release rate, with thicker devices exhibiting slower and more prolonged release rate since moisture takes a longer time to reach the particles as they are further removed from the exposed surface (page 8, paragraph 3). As such, it would have been obvious to one having ordinary skill in the art at the time the invention was made to decrease the thickness of the device for applications in which a faster release rate is desired at longer times, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2nd 272, 205 USPQ 215 (CCPA 1980).

4. Claims 14-22, 37-45, and 60-68 rejected under 35 U.S.C. 103(a) as being unpatentable over Sanderson et al. (WO 03/018431 A1).

Sanderson et al. teach a sulfur dioxide gas generating device using in the packaging industry (page 1, lines 9-21). The device has a layer comprising a gas generating compound dispersed in a polymer matrix between a carrier sheet and cover sheet (page 3, lines 27-34). In one embodiment the device contains 0.1-0.3 kg of sodium metabisulphite per kg of polymer (page 8, lines 25-28).

Sanderson et al. are silent as to the thickness of the matrix layer in their device. However, Sanderson et al. do teach that the exact configuration of the matrix layer will depend on requirements, such as the targeted shelf or storage life, the nature of the fruit, and the cost

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allowed for the gas generating device (page 8, lines 4-9). That is, Sanderson et al. teach that the configuration of the matrix layer is a results effective variable and, as such, it would have been obvious to one having ordinary skill in the art at the time the invention was made to optimize the configuration, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2nd 272, 205 USPQ 215 (CCPA 1980) and MPEP 2144.05.

Regarding claims 15, 20, 21, 38, 43, 44, 61, 66, and 67, the carrier and/or cover sheets meet the limitations of these claims since they would be expected to release gas (at least through decomposition) upon exposure to a sufficiently high amount of electromagnetic energy, such as UV radiation, particularly since Sanderson et al. teach the use of plastics as the carrier and cover sheets (see page 6, line 11-page 7, line 7) and plastics are known to undergo chain scission upon exposure to sufficiently high levels of UV radiation.

5. Claims 3, 5, 25, 28, 48, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Opperman et al. (ZA 9602517 A) in view of Aamodt et al. (U.S. Patent 6,325,969).

Opperman et al. teach all the limitations of claims 3, 5, 25, 28, 48, and 51, as outlined above, except for the presence of a second compound that generates chlorine dioxide.

Aamodt et al. teach that chlorine dioxide gas is useful for killing biological contaminants, such as fungi (column 2, lines 37-41). The chlorine dioxide may be formed from a composition which absorbs water from the air and releases chlorine dioxide over time (column 2, lines 42-49).

One skilled in the art would be motivated to use a combination of the gas generating solids of Opperman et al. and Aamodt et al. in the device of Opperman et al. because both produce gases upon exposure to water that act as fungicides. It has been held that it is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose. The idea of combining them flows logically from their having been individually taught in the prior art. See MPEP 2144.06.

#### ***Response to Arguments***

6. Applicant's arguments with respect to claims 1-68 have been considered but are moot in view of the new ground(s) of rejection. Moreover, the results presented in the Examples and summarized in the response filed 19 December 2006 are not sufficient to overcome the obviousness rejections put forth above for the following reasons.

First, the showing presented is not commensurate in scope with the invention as claimed (see MPEP 716.02(d)). Examples 2-5 are directed to films having thicknesses in the range of 25-180  $\mu\text{m}$  while the invention as claimed encompasses thicknesses between about 5 and 500  $\mu\text{m}$ . Examples 2-5 also contain 12-37 wt% of sodium metabisulfite and 63-88 wt% of low density polyethylene while the invention as claimed encompasses films having 0.1-70.0 wt% of a gas generating solid and 30.0-99.9 wt% of a polymer.

Second, the results of Examples 2-5 cannot properly be compared with the data presented in Figures 5 and 6 of Opperman et al. since the films have different gas generating solids content

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and the results are derived in different fashions (i.e. the instant data is reported as the results of an accelerated testing procedure).

Finally, the results of the comparison do not appear to be unexpected. The applicants state that the release rate after 7 days of Examples 2-5 is 25 ppm in contrast to the thicker film of Opperman et al. which exhibits a release rate of below about 20 ppm after 7 days. This is to be expected as Opperman et al. explicitly teach that the release rate of thicker films at longer times will be slower because the moisture takes a longer time to reach particles that are further removed from the exposed surface (see page 8, paragraph 3).

Additionally, it is noted that the examiner disagrees with the applicants' contention that the description in Opperman et al. of the relationship between the thickness and release rate (paragraph 3, page 8) is only in reference to devices having a thickness of 2-3 mm. The 2-3 mm thickness cited in the paragraph is characterized as a suitable thickness for 2 months of normal grape storage. However, the mechanism described in the paragraph as resulting in the relationship between thickness and release rate (i.e. that moisture takes a longer time to reach the particles as they are further removed from the exposed surface) would be understood by one skilled in the art as applicable to any thickness. The applicants have not demonstrated why moisture would take a longer time to reach particles further removed from the surface of a 2-3 mm thick device without also taking longer to reach particles further removed from the surface of a film that is less than 2 mm thick or greater than 3 mm thick.


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***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramsey Zacharia whose telephone number is (571) 272-1518. The examiner can normally be reached on Monday through Friday from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney, can be reached at (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**Ramsey Zacharia**  
**Primary Examiner**  
**Tech Center 1700**